

NEW SYNONYMIES IN THE GENUS *BILLBERGIA* THUNBERG (BROMELIACEAE)

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ABSTRACT. Taxonomic studies of the genus *Billbergia* in Rio de Janeiro State, Brazil, showed that three synonymies may be proposed: *Billbergia* var. *amoena* (syn.: *Billbergia amoena* var. *rubra*); *Billbergia tweedieana* (syn.: *Billbergia tweedieana* var. *minor*); *Billbergia pyramidalis* var. *pyramidalis* (syn.: *Billbergia pyramidalis* var. *vernica*). After field surveys and studies of voucher specimens from other states, it is recommended that a taxonomic revision be initiated, given the variation occurring in the specimens.

The genus *Billbergia* has about 65 species distributed from Mexico to southern South America. After the classic works of Mez (1892, 1935) and Smith & Downs (1979) no other author has extensively studied this genus. Nevertheless, Pereira (1979), Pereira and Moutinho (1981), Pereira and Leme (1984, 1985), and Leme and Weber (1984) have published new species.

This work presents three synonymies within the genus *Billbergia* after taxonomic studies in Rio de Janeiro State as part of a Bachelor monograph presented in the graduate course of biological sciences at Santa Ursula University in May, 1989.

1. *Billbergia amoena* (Loddiges) Lindley var. *amoena*. Bot. Reg. 13:sub.pl. 1068. 1827.

TYPE. *Loddiges Hortus in Lindley s/n* (Holotype, CGE; Photo, GH).

Syn.: *B. amoena* var. *rubra* Foster, Bull. Bromeliad Soc. 6:76.1956. **TYPE.** Brazil: Espírito Santo, Vitória, 13 Jul. 1939, *Foster 2903* (Holotype, US).

In the original description the variety was distinguished as having red leaves, but field surveys have shown this color to be a result of different patterns of light intensity.

Plant very variable with 8–20 leaves, 19.0–90.0 cm long, 2.5–5.5 cm wide, ligulate, green, reddish or white-spotted; sheaths large, elliptic; apex rounded or acute, apiculate or not; margins serrate or serrulate. Scape 0.3–0.5 cm in diameter, erect or ascending, slender or stout, completely glabrous or with some evanescent scales, green or reddish. Scape bracts suberect, elliptic; apex apiculate or acuminate, reddish to pink exposing the scape. Inflorescence 2.0–14.0 cm long, usually compound but sometimes simple, lax, nearly glabrous; primary bracts like scape bracts. Floral bracts 0.1 cm long, the upper ones reniform, apiculate. Flowers 3.5–7.5 cm long, sessile. Sepals 1.7–3.0 cm long, narrowly elliptic to oblong; apex blue, acute or minutely acuminate with white evanescent scales; lower part greenish. Pet-

als 3.0–5.5 cm long, obtuse with blue apex, adaxially with two fimbriate scales at base and two long, narrow calli placed laterally to stamens. Ovary 0.6–1.8 cm long, cylindric, green, sharply sulcate.

Flowering from March to October. Habit: epiphytic, saxicolous and terrestrial; habitat: Atlantic rain forest and sand dune coastal plains. Very frequent in the Rio de Janeiro coastal plains.

EXAMINED MATERIAL. Angra dos Reis: Rio Barra Pequena, 2 Jul. 1980, *D. Araújo 3893* (GUA); Ilha Grande, Res. Biológ. da Praia da Sul, 27 Nov. 1983, *D. Araújo et al. 5714* (GUA). Arraial do Cabo: 23 Mar. 1978, *G. Martinelli et al. 4103* (RB). Cabo Frio: 9 km ao norte do Rio Una, 28 Jun. 1983, *D. Araújo 5625* (GUA); Morro do Gavião, 13 Dec. 1968, *D. Sucre 3923* (RB). Casimiro de Abreu: Barra de São João, 23 May 1964, *P. Carauta 211* (RB); entre Barra de São João e Tamoios, 28 Nov. 1964, *E. Santos 2067*, B. Flaster 1104 (R,HB). Macaé: Fazenda Crubixas, 30 Jul. 1982, *C. Farney 61* (RB); Pico do Frade, 16 Nov. 1982, *G. Martinelli & C. Farney 8729*. Maricá: Praia de Itaipuaçu, 11 Apr. 1986, *D. Araújo 7351* (GUA); restinga de Barra de Maricá, 9 May 1984, *D. Araújo 6252*. (GUA). Nova Friburgo: Murú, Macaé de Cima, 25 Dec. 1986, *G. Martinelli 11285* (RB). Petrópolis: Araras, estr. p/ Santa Catarina, 25 Jun. 1968, *P.I.S. Braga 1559* (RB); Vale das Videiras, 26 Nov. 1980, *G. Martinelli 7399* (RB). Resende: Parque Nacional do Itatiaia, 15 Oct. 1948, *P. Occhioni 1128* (RB). Rio de Janeiro: Serra do Mendanha, 23 Apr. 1973, *D. Sucre 10097* (RB); Campo Grande, Rio da Prata, 6 Jul. 1977, *H.C. de Lima 111* (RB); ibidem, Rio da Prata do Cabuçu, 3 Jun. 1949, *B. Lutz s.n.* (R); Jacarepaguá, 15 Dec. 1958, *E. Pereira 4406* (RB); ibidem, 9 Jun. 1969, *D. Sucre et al. 5239* (RB); Grumari, 31 Jul. 1968, *D. Sucre 3379* (RB); restinga de Grumari, 24 May 1982, *D. Sucre 5071* (GUA); Recreio dos Bandeirantes, praia de Grumari, 16 Oct. 1986, *T. Wendt et al. 17* (RB); ibidem, Pedra de Itaúna, 22 Jul. 1965, *N. Santos et al. 5868* (R); Recreio, Lagoa dos Tachas, 16 Jun. 1963, *N. Santos 502* (R). Santa Maria Madalena: Parque Estadual do Desengano, 19 Nov. 1986, *G. Martinelli et al. 11729* (RB); ibidem, 3 Mar. 1934, *Santos Lima & Brade 13372* (RB). São João da Barra: 3 Oct. 1963, *A.C. Brade 1585*, *M. Emmerich 1574* (R). Saquarema: restinga de Ipitangas, 24 Mar. 1987, *T. Fontoura et al. 74* (RB); ibidem, 19 May 1987, *T. Fontoura et al. 137*

(RB). Teresópolis: Guarani, 4 Dec. 1929, *A. C. Brade* 9581 (R).

2. ***Billbergia tweedieana* Baker var. *tweedieana*.**
Handb. Bromel. 73. 1889.

TYPE. Brazil: Rio de Janeiro. Ca. 1832, *Tweedie* 1313 (Holotype, K; Photo, GH).

Syn.: *Billbergia tweedieana* var. *minor* Smith, Smithsonian Misc. Collect., 126:22. 1955. TYPE. Brazil: Espírito Santo. Santa Tereza, s/d, *Foster* 277 (Holotype, GH; Isotype, R!, US).

The varieties were based on length and apex of sepals. Nevertheless these characteristics can be observed overlapping one another; i.e., sepal length may range from 1.6 cm to 2.4 cm with acute apex.

Plant forming a tubular small or large rosette. Leaves 60.0–150.0 cm long, 5.5–7.5 cm wide, ligulate to narrowly triangular, green, concolorous when dry; sheaths sometimes reddish, narrow and sometimes indistinct, covered with appressed scales on both sides; apex rounded or apiculate but often decayed; margins serrate with spines 0.1–0.2 cm long. Scape stout, about 0.5 cm in diameter, green. Scape bracts enfold the scape, narrowly elliptic; apex acute or acute-acuminate, papyraceous, pink, white-lepidote. Inflorescence 21.0–24.0 cm long, compound, laxly paniculate, lepidote or glabrous. Primary bracts like the scape bracts, large; Lower branches lax, longer than 8.0 cm. Flowers 5.0–7.0 cm long, sessile. Sepals 1.6–2.4 cm long, asymmetric, scarcely lepidote or glabrous, green. Petals 3.5–5.3 cm long, blue at upper part and greenish below, adaxially with only two scales not horizontally appressed. Ovary about 1.5 cm long, cylindric; epigynous tube almost lacking; fruit ellipsoid, sulcate.

Flowering in January, March, September and October. Habit: saxicolous and terrestrial; habitat: sand dunes on the coastal plain.

EXAMINED MATERIAL. Cabo Frio: Restinga do Peró, 17 Nov. 1968, *D. Sucre* 3696 (RB); Morro do Farol da Lagoinha, 29 Oct. 1986, *D. Araújo & H.C. de Lima* 7545 (GUA); Armação de Búzios, 11 Jan. 1979, *G. Martinelli et al.* 5575 (RB).

3. ***Billbergia pyramidalis* (Sims) Lindley var. *pyramidalis*.** Bot. Reg. 13:sub.pl.1068. 1827.

TYPE. Sims Hortus s.n. s/d (“Description and plate”).

Syn.: *Billbergia pyramidalis* var. *vernica* E. Pereira, *Bradea* 2 (47):308. 1979. TYPE. Brazil: Rio de Janeiro, Nova Friburgo, Amparo, 27 Jul. 1976, *F. Dungs* 34 (HB!)

In the original description, *B. pyramidalis* var. *vernica* is described as presenting “brilliant

leaves and flowers” but this appearance is produced by a chemical substance on the voucher specimen to avoid insect predation.

Leaves few (to 13), forming a tubular rosette, 22.0–96.0 cm long, 3.0–5.5 cm wide, ligulate, often white-banded on lower part; sheaths elliptic to oblong-elliptic and sometimes purplish covered with a membrane of fused scales; apex acute, acuminate or apiculate; margins laxly serrulate or serrate. Scape ca. 0.5 cm in diameter, erect, stout, white lanuginous. Scape bracts erect, imbricate and the upper ones clustered beneath the inflorescence, elliptic, pink or rose with an acute apex. Inflorescence rarely exceeding 10.0 cm long, erect, simple, corymbose or short cylindric, densely white lanuginous. Floral bracts very small, ovate, acute, often hidden by the lanuginous indument. Flowers 5.0–7.5 cm long, sessile. Sepals 1.1–2.0 cm long, short-connate or free, lepidote, slightly asymmetric, oblong with an obtuse or obtuse-apiculate apex, pale red. Petals 4.0–6.0 cm long, red, contorted after anthesis, apex blue, obtuse, lower part red, adaxially with two fimbriate scales and two calli. Ovary 0.7–1.5 cm long, cylindric, lanuginous; epigynous tube short.

Flowering from February to April, July, September to December. Habit: epiphytic, rupicolous, saxicolous, terrestrial; habitat: Atlantic rain forest and sand dunes of the coastal plains.

EXAMINED MATERIAL. Cabo Frio: caminho p/ Araçá, 24 Apr. 1979, *J.P.P. Carauta* 3097 (GUA). Nova Friburgo: Macaé de Cima 27 Nov. 1986, *G. Martinelli et al.* 11950 (RB). Nova Iguaçu: Serra da Bandeira, 17 Dec. 1977, *D. Araújo et al.* 1867 (GUA). Petrópolis: antiga estrada p/ Petrópolis, 10 Jul. 1978, *G. Martinelli* 4691 (RB); 1o Distrito, Meio da Serra, 9 Mar. 1978, *G. Martinelli* 4031 (RB); Araras, base da Pedra Maria Comprida, 23 Mar. 1968, *D. Sucre* 2580, *P.I.S. Braga* 412 (RB); Mata do Judeu, 7 Dec. 1968, *D. Sucre et al.* 4234 (RB). Rio de Janeiro: vertente Oeste do Morro do Sumaré, 8 Feb. 1969, *D. Sucre* 4692 (RB); Estrada da Vista Chinesa, Dec. 1983, *A. Aguiar s.n.* (GUA); Barra da Tijuca, Nov. 1936, *Brade* 15483 (RB).

DISCUSSION AND CONCLUSION

Three synonymies are proposed: *Billbergia amoena* var. *amoena* (syn.: *B. amoena* var. *rubra*); *B. tweedieana* (syn.: *B. tweediana* var. *minor*); *B. pyramidalis* var. *pyramidalis* (syn.: *B. pyramidalis* var. *vernica*).

Other billbergias including *B. euphemiae* E. Morren, *B. morelii* Brongniart, *B. lymanii* Pereira & Leme, *B. lietzi* E. Morren need to be more closely studied as variations of the sepals and pedicels of certain specimens have been observed. Some of these collections are possible new taxa.

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